

### Pending Claims

1. A method for identifying a compound that modulates DAF-18 expression or activity, comprising:

(a) providing a nematode, isolated nematode cell, or isolated mammalian cell expressing a nematode *daf-18* gene; and

(b) contacting said nematode, isolated nematode cell, or isolated mammalian cell with a candidate compound to determine the effect of said candidate compound on *daf-18* expression or activity, an alteration in said *daf-18* expression or activity following contact of said nematode, isolated nematode cell, or isolated mammalian cell with said candidate compound identifying said candidate compound as a modulatory compound.

2. A method for identifying a compound that modulates PTEN expression or activity, comprising:

(a) providing a nematode or isolated nematode cell comprising a mutation in its endogenous *daf-18* gene;

(b) expressing in said nematode or isolated nematode cell a mammalian PTEN gene; and

(c) contacting said nematode or isolated nematode cell with a candidate compound to determine the effect of said candidate compound on PTEN expression or activity, an alteration in said PTEN expression or activity following contact with said candidate compound identifying said candidate compound as a modulatory compound.

3. The method of claim 1 or 2, wherein said compound increases *daf-18* or PTEN expression or activity and is therefore a candidate compound for increasing longevity of a cell or organism.

4. The method of claim 1 or 2, wherein said compound decreases *daf-18* or PTEN expression or activity and is therefore a candidate compound for treating an impaired glucose tolerance condition or obesity.

5. The method of claim 1 or 2, wherein said method is carried out in a transgenic nematode.

8. The method of claim 2, wherein said PTEN is human PTEN.

10. A method for identifying a compound that is a candidate compound for ameliorating or delaying an impaired glucose tolerance condition or obesity, comprising contacting a biological sample with a candidate compound and assaying said sample for DAF-18-mediated lipid phosphatase activity, a decrease in said activity indicating a candidate compound for ameliorating or delaying an impaired glucose tolerance condition or obesity.

11. A method for identifying a compound that is a candidate compound increasing longevity of a cell or organism, comprising contacting a biological sample with a candidate compound and assaying said sample for DAF-18-mediated lipid phosphatase activity, an increase in said activity indicating a candidate compound for increasing longevity of a cell or organism.

12. A method for identifying a compound that is a candidate compound for ameliorating or delaying an impaired glucose tolerance condition or obesity, comprising contacting a biological sample with a candidate compound and assaying said sample for PTEN-mediated lipid phosphatase activity, a decrease in said activity indicating a candidate compound for ameliorating or delaying an impaired glucose tolerance condition or obesity.

13. A method for identifying a compound that is a candidate compound for increasing longevity of a cell or organism, comprising contacting a biological sample with a candidate compound and assaying said sample for PTEN-mediated lipid phosphatase activity, an increase in said activity indicating a candidate compound for increasing longevity of a cell or organism.

14. The method of claim 10 or 12, wherein said method further comprises assaying said compound in a nematode or isolated nematode cell which comprises a mutation in its endogenous *daf-18* gene and which expresses a mammalian PTEN gene, a decrease in PTEN activity indicating a candidate compound for treating an impaired glucose tolerance condition or obesity.

15. The method of claim 11 or 13, wherein said method further comprises assaying said compound in a nematode or isolated nematode cell which comprises a mutation in its endogenous *daf-18* gene and which expresses a mammalian PTEN gene, an increase in PTEN activity indicating a candidate compound for increasing longevity of a cell or organism.

16. The method of claim 14, wherein said mammalian PTEN is human PTEN.

17. The method of claim 15, wherein said mammalian PTEN is human PTEN.

23. A transgenic nematode whose cells contain a transgene encoding a mammalian PTEN polypeptide.

25. The transgenic nematode of claim 23, wherein said nematode carries a mutation in its endogenous *daf-18* gene.

26. The method of claim 5, further comprising the step of testing said identified compound in a diabetic or obesity mouse model system.

27. The transgenic nematode of claim 23, wherein said mammalian PTEN is human PTEN.

28. The transgenic nematode of claim 25, wherein said mammalian PTEN is human PTEN.